Torsion of a hollow...

layers. Moreover, the displacement functions must satisfy certain boundary conditions. The system of coordinates t, ξ is better adapted to the problem. It is connected with the cylindrical coordinates r, z by the equations

$$r = c\, e^t \sqrt{1 - \xi^2}\,, \quad z = c\, e^t \xi\,, \qquad \xi = z/\sqrt{r^2 + z^2}\,, \quad t = \ln(\sqrt{r^2 + z^2}/c)\,,$$

where c is the radius of the parting surface of the layers. In this system of coordinates the differential equations of the displacement function take on the following form:

$$\frac{\partial^2 \Psi_j}{\partial t^2} + (1 - \xi^2)\frac{\partial^2 \Psi_j}{\partial \xi^2} + 3\frac{\partial \Psi_j}{\partial t} - 4\xi\frac{\partial \Psi_j}{\partial \xi} = 0, \quad \text{if} \quad \Psi_j^*(r(t,\xi), z(t,\xi)) = \Psi_j(t,\xi).$$

Together with the boundary conditions formulated in this paper, the solutions of these differential equations are displacement functions:

Card 2/3

Torsion of a hollow... S/022/61/014/001/003/010
B112/B202

$$\Psi_j(t,\xi) = \sum_{k=0}^{\infty} e^{-\frac{3}{2}t}\left\{\left(A_{jk}\,\mathrm{sh}\,\frac{4k+3}{2}\,t + B_{jk}\,\mathrm{ch}\,\frac{4k+3}{2}\,t\right)P^1_{2k+1}(\xi)\right.$$

$$\left. + D_{jk}\cos a_{jk}t\, P'_{-\frac{1}{2}+ia_{jk}}(\xi)\right\},$$ where the functions P^1 are associated spherical functions ($P^1 = \frac{dP}{dx}$), P' are conical functions, whereas the constants A, B, C, a are determined by the boundary conditions. Finally, the authors derive an equilibrium condition for the moments of torsion to which the hemisphere is subjected. There are 1 figure and 9 references: 6 Soviet-bloc.

ASSOCIATION: Institut matematiki i mekhaniki AN Armyanskoy SSR
(Institute of Mathematics and Mechanics AS Armyanskaya SSR)

SUBMITTED: November 15, 1960

Card 3/3

GULKANYAN, N. O.

Dissertation defended at the Institute of Mechanics for the academic degree of Candidate of Physicomathematical Sciences:

"Torsion and Bending of Tubular Prismatic Rods with Polygonal Cross Section."

Vestnik Akad Nauk, No. 4, 1963, pp. 119-145

GULKANYAN, N.O.

Calculation of sums of certain series. Izv. AN Arm. SSR. Ser. fiz.-mat. nauk 16 no.1:119-127 '63. (MIRA 16:3)

1. Institut matematiki i mekhaniki AN Armyanskoy SSR.
(Series)

GULKANYAN, Vartan Anesovich; BATIKYAN, G.G., otv. red.

[Cotton surgery] Khirurgiia khlopchatnika. Erevan, Izd-vo AN Arm.SSR, 1963. 436 p. (MIRA 17:6)

GULKANYAN, V. O.

"Obtaining Regenerative Shoots from the Cotton, Tobacco, and Tomato Plants," in the book, Achievements of Sound Scientific Workers Dedicated to the 20th Anniversary of the Lenin-Stalin Komsomol, Yerevan, 1939

GULKANYAN, V. O. and OGANESYAN, S. G.

"Crossing of Tr. Timopheevus with Soft Wheats in Free and Forced Pollination," Annals of the Armenian Branch of the Academy of Sciences USSR, No.8, 1941

GULKANYAN, V.O.

Inheritance of rust-resistance in Timopheevi wheat [in Armenian with summary in Russian]. Izv.AN Arm.SSR.Est.nauki no.7:27-52 '47. (MLRA 9:8)

1. Deystvitel'nyy chlen AN Armyanskoy SSR.
(Wheat) (Hybridization, Vegetable)

GULKANYAN, V.O.; OGANESYAN, S.G.

Nature of the splitting of wheat hybrids obtained by zonal pollination. Dokl.AN Arm. SSR 9 no.5:225-230 '48.

(MLRA 9:10)

1. Deystvitel'nyy chlen Akademii nauk Armyanskoy SSR (for Gulkanyan)
2. Institut Genetiki rastitel'noy Akademii nauk Armyanskoy SSR, Yerevan.
(Wheat) (Hybridization, Vegetable)

GULKANYAN, V.O.

Success of agrobiological science in the Armenian S.S.R. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki. 2 no.1:3-14 '49. (MLRA 9:8)

1. Deystvitel'nyy chlen AN Armyanskoy SSR.
(ARMENIA--AGRICULTURE)

GULKANYAN, V.O.

Cytological investigation of vegetative tomato hybrids. Izv.AN Arm. ssr. Biol. i sel'khoz. nauki 2 no.3:305-308 '49. (MLRA 9:8)

1. Institut genetiki i selektsii rasteniy Akademii nauk Armyanskoy SSR. (TOMATOES)

GULKANYAN, V. O.

"Deep Trimming of the Cotton Plant. Status of the Problem of Trimming the Cotton Plant," Iz. Ak. Nauk ArmSSR, Biol. i Sel'skokh. nauki, 2, No.4, 1949

GULKANYAN, V.O.

Late defaliation of the cotton plant and its practical application [in Armenian with summary in Russian]. Izv.AN Arm.SSR.Biol.i sel'-khoz.nauki. 3 no.12:1071-1086 '50. (MLRA 9:8)

1. Deystvitel'nyy chlen AN Arm.SSR.
(Cotton growing)

GULKANYAN, V.O.

Age depression in the hybrids of some wheat varieties. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki. 4 no.11:973-1003 '51. (MLRA 9:8)

1. Deystvitel'nyy chlen Akademii nauk Armyanskoy SSR. 2. Institut genetiki i selektsii rasteniy AN Armyanskoy SSR.
(ARMENIA--WHEAT)

GULKANYAN, V.O.; SURMENYAN, G.A.; SARKSYAN, S.S.

Valuable lines of wheat for the mountainous regions of Armenia. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki, 5 no.8:3-14 '52. (MLRA 9:8)

1. Institut genetiki i selektsii rasteniy Akademii nauk Armyanskoy SSR.

(Armenia--Wheat--Varieties)

GULKANYAN, V.O.; OGANESYAN, S.G.

Selectivity of fertilization in wheat with mature and overmature pistils. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki. 5 no.9:33-44 '52. (MLRA 9:8)

1. Institut genetiki i selektsii rasteniy AN Armyanskoy SSR.
(Wheat breeding)

GULKANYAN, V.O.

Persicum branched wheat. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki. 5 no.11:49-68 '52. (MLRA 9:8)

1. Deystvitel'nyy chlen AN Arm. SSR; 2. Institut genetiki i selektsii AN Arm. SSR.
(Armenia--Wheat)

GULKANYAN, V.O.; OGANESYAN, S.G.

Observations on the crossing of branched rivet wheat with unbranched wheats. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki 6 no.1:3-15 '53.
(MLRA 9:8)

1. Institut genetiki i selektsii rasteniy AN Arm.SSR.
(Wheat)

GULKANYAN, V.O.

Intense topping of the cotton plant. Izv.AN Arm.SSR.Biol.i sel'khoz. nauki 6 no.8:3-21 '53. (MLRA 9:8)

1. Deystvitel'nyy chlen AN Arm. SSR.; 2. Institut genetiki i selektsii rasteniy AN Arm. SSR.
(Cotton growing)

GULKANYAN, V.O.; SURMENYAN, G.A.

Significance of valuable local wheat populations in the breeding of new varieties. Izv.AN Arm.SSR.Biol.i sel'khoz. nauki 6 no.12: 3-17 '53. (MLRA 9:8)

(Armenia--Wheat--Varieties)

GULKANYAN, V. O.

Category : USSR / Plant Diseases. Diseases of Cultivated Plants N-3

Abs Jour : Ref Zhur - Biol., No 6, March 1957, No 22944

Author : Gulkanyan, V.O., Oganesyan, S.G., Oganesyan, A.A.
Title : Effect of Nutrients of Fungal Diseases Affecting Wheat.

Orig Pub : Izv. AN ArmSSR, biol. i s.-kh. n., 1956, 9, No 6, 59-76

Abstract : In studying the effects of nutrition by NPK, NPK + manure on diseases caused by forms of tust, firebrand and parasitic fungi on wheat varieties Artashati 42, Grekum 24, Eritroleukon 1, Yevgardi 4, Eritrospermum 4 and Eritroleukon 2, it was established that the index of resistance against fungal diseases is very constant. Independently of the time nutrients were administered, the plant vigor was increased, the vegetative period lengthened and the diseases of the varieties from rust and parasitic fungi were somewhat increased.

Card : 1/1

GULKANYAN, V.O.

Achievements and future tasks in wheat breeding in the Armenian S.S.R.
Izv. AN Arm. SSR. Biol. i sel'khoz. nauki 10 no.10:59-80 O '57.
(Armenia--Wheat breeding) (MIRA 10:12)

GULKANYAN, V.O.

Interrelationships in a plant community. Izv.AN Arm.SSR.Biol. nauki 12 no.3:21-33 Mr '59. (MIRA 12:9)

1. Institut zemledeliya Ministerstva sel'skogo khozyaystva ArmSSR.

(BOTANY--ECOLOGY)

GULKANYAN, V.O.; KHACHATRYAN, G.G.

Changes in the tillering of wheat under the influence of gibberellin. Izv. AN Arm. SSR. Biol. nauki 14 no.12:9-23 D '61. (MIRA 15:3)

1. Institut zemledeliya Ministerstva sel'skogo khozyaystva Armyanskoy SSR.

(GIBBERELLIN)
(WHEAT)

GULKANYAN, V. O.

Intravarietal crossing of wheat in connection with seed production. Izv. AN Arm. SSR. Biol. nauki 15 no.4:3-11 Ap '62. (MIRA 15:7)

1. Institut zemledeliya Ministerstva sel'skogo khozyaystva Armyanskoy SSR.

(WHEAT BREEDING) (SEED PRODUCTION)

GULKANYAN, V.O.

Importance of pruning in the production of wheat seed. Izv. AN Arm. SSR. Biol. nauki 15 no.5:3-10 My '62. (MIRA 17:6)

GULKANYAN, V.O.

Agrobiological science and wheat seed production. Izv.AN Arm. SSR.Biol.nauki 15 no.7:3-12 Jl '62. (MIRA 15:11)
(WHEAT) (SEED PRODUCTION)

GULKANYAN, V.G.; OGANESYAN, S.G.

Significance of the technology of plant growing in the biological improvement of wheat seeds. Izv. AN Arm. SSR. Biol. nauki 17 no.8: 3-14 Ag '64. (MIRA 17:10)

1. Armyanskiy institut zemledeliya.

GULKANYAN, V.G.; KHACHATRYAN, G.G.

Similarity of the effect of low temperature and gibberellin on plants. Izv. AN Arm. SSR. Biol. nauki 17 no.12:3-11 D '64. (MIRA 18:3)

1. Nauchno-issledovatel'skiy institut zemledeliya Ministerstva proizvodstva i zagotovok sel'skokhozyaystvennykh produktov ArmSSR.

ACC NR: AP7012395 SOURCE CODE: UR/0187/67/000 001 0046/0049

AUTHOR: Semenov, N. A.; Gul'karov, P. S.

ORG: none

TITLE: Surface wave line for television transmission

SOURCE: Tekhnika kino i televedeniye, no. 1, 1967, 46-49

TOPIC TAGS: transmission line, frequency modulation, signal distortion, TV system

SUB CODE: 09

ABSTRACT: The characteristics and specific features of an experimental surface wave television transmission line using frequency modulation set up between Maloyaroslavets and Obninsk are described. An evaluation of the results of measurements using the experimental line is presented. The experiments showed that the wave guide and apparatus of the surface wave line have quality indicators within the established norms with the exception of periodic distortion caused by double reflections from the points of connection of the wave guide to the overhead cable posts. The voltage reflection coefficient from one post is 3%. Improvements in the method of suspending the wire will permit, the authors believe, a reduction in reflection by a factor of 1.5-2, which will eliminate the signal distortion for lines up to 50 km long. Orig. art. has: 6 figures and 1 formula. [JPRS: 40,450]

Card 1/1 UDC: 621.395.4:621.397

0932 1317

GUL'KEVICH, Yu.V.; LAZYUK, G.I.; GUL'KEVICH, K.Yu.

The pathogenesis of abnormalities and the specificity of teratogenic action. Arkh. pat. 22 no. 12:3-19 '60. (MIRA 14:1)
(DEFORMITIES)

SERZHANINA, A.N., dotsent; GUL'KEVICH, K. Yu. (Minsk)

Pulmonary hyaline membranes in newborn infants. Arkh. pat. 25 no.4:83-9 '63 (MIRA 17:4)

1. Iz kafedry patologicheskoy anatomii (zav. - prof. Yu.V. Gul'kevich) Minskogo meditsinskogo instituta.

GUL'KEVICH, Yu.V.; GUL'KEVICH, K.Yu.

Cavernous hemangiomas of the liver in newborn infants and their thanatogenetic importance. Trudy Inst. eksp. morf. AN Gruz. SSR 11:111-114 '63. (MIRA 17:11)

1. Kafedra patologicheskoy anatomii Minskogo meditsinskogo instituta.

GUL'KEVICH, Yu. A.

"The Pathological Anatomy of Acute Loss of Blood with a Battle Wound," Arkhiv. Patol., 10, No. 1, 1948.

Lt. Col., Med. Service,
Chief Pathologist, Medical Administration

GUL'KEVICH, Yu.V., prof. (Minsk)

Second All-Union Conference of Pathological Anatomists.
Arkh. pat. 20:91-94 '62. (MIRA 17:1)

GUL'KEVICH, Yu., prof. (Minsk); MITIN, K.S., kand.med.nauk (Moskva)

Reviews. Arkh. pat. 27 no.5:73-76 '65. (MIRA 18:5)

GUL'KEVICH, Yu.V.; YEVSEV'YEV, Ye.P., dotsent

Activities of the Stalinabad Society of Pathoanatomists (Tajik S.S.R.) for 1954. IU.V. Gul'kevich, E.P. Evsev'ev. Arkh. pat. 17 no.4:89-90 O-D '55. (MLRA 9:2)

(STALINABAD, ANATOMY, PATHOLOGICAL-SOCIETIES)

GUL'KEVICH, Yu.V., prof.

"Textbook of specialized pathological anatomy" by E. Kaufmann. Reviewed by IU.V. Gul'kevich. Arkh.pat. 18 no.3:117-119 '56 (MIRA 11:10)

(ANATOMY, PATHOLOGICAL)
(KAUFMANN, E.)

GUL'KEVICH, Yu.V., professor

"Textbook on special pathological anatomy" [in German] by E.Kaufman. Reviewed by IU.V.Gul'kevich. Arkh.pat. 18 no.5:105 '56. (MIRA 9:12)
(ANATOMY, PATHOLOGICAL) (KAUFMAN, E.)

GUL'KEVICH, Yu.V., professor

"Archives of pathology", 1955, vol. 60, no.1 [in English]. Reviewed by IU.V.Gul'kevich. Arkh.pat. 18 no.6:126-131 '56. (MLRA 9:12)
(PATHOLOGY)

GUL'KEVICH, Yu.V., professor

Abstracts of foreign medical literature. Arkh. pat., 19 no.3:84 '57
(MLRA 10:5)

(ARCHIVES OF PATHOLOGY, 1955, VOL 60, NO. 2)

GUL'KEVICH, Yu.V., prof.

"Textbook in special pathological anatomy" [in German] by E.Kaufmann, ed. by. M.Staemmler, vol. 1, nos. 2,3,5. Reviewed by IU.V.Gul'kevich. Arkh.pat. 19 no.8:91-93 '57. (MIRA 10:12)
(ANATOMY, PATHOLOGICAL) (KAUFMANN, E.) (STAEMMLER, M.)

GUL'KEVICH, Yu.V., prof.; SERZHANINA, A.N., dots.

Work of the Minsk Municipal Society of Pathoanatomists during 1956.
Arkh.pat. 20 no.2:92-93 '58. (MIRA 11:4)

1. Predsedatel' Minskogo gorodskogo nauchnogo obshchestva patologoanatomov (for Gul'kevich). 2. Sekretar' Minskogo gorodskogo nauchnogo obshchestva patologoanatomov (for Serzhanina)
(MINSK--ANATOMY, PATHOLOGICAL--SOCIETIES)

GUL'KEVICH, Yu.V., prof.; RABTSEVICH, T.S. (Minsk)

"A.M.A. Archives of Pathology," vol.63, nos.2-4, 1957. Reviewed by IU.V. Gul'kevich, T.S. Rabtsevich. Arkh.pat. 21 no.1:67-72 '59. (MIRA 12:1)

(PATHOLOGY--PERIODICALS)

GUL'KEVICH, Yu.V., prof. (Minsk)

Review of K.J. Zülch's "Brain tumors from the biological and morphological points of view" [in German]. Arkh.pat. 21 no.5:79-80 '59. (MIRA 12:12)

(BRAIN--TUMORS) (ZÜLCH, K.J.)

GUL'KEVICH, Yu.V., prof. (Minsk)

Review of E.F. Kaufmann's "Textbook of specialized pathological anatomy." Arkh.pat. 21 no.6:86 '59. (MIRA 12:12)
(ANATOMY, PATHOLOGICAL) (KAUFMANN, E.F.)

GUL'KEVICH, Yu.V., prof. (Minsk)

"Textbook of special pathological anatomy" by E. Kaufman [in German]. Volume 3, Numbers 1 and 2. Reviewed by IU.V. Gul'-kevich. Arkh.pat. 21 no.7:75-77 '59. (MIRA 13:5)
(ANATOMY, PATHOLOGICAL) (KAUFMAN, E.)

AGEYCHENKO, M.D.; GUL'KEVICH, Yu.V. (Minsk)

Listeriosis in newborn infants. Arkh.pat. no.1:17-23 '62.
(MIRA 15:1)

1. Iz kafedry patologicheskoy anatomii (zav. - prof. Yu.V. Gul'kevich) Minskogo meditsinskogo instituta (dir. - dotsent A.A. Klyucharev).
(INFANTS (NEWBORN)--DISEASES) (MONONUCLEOSIS)

GUL'KEVICH, Yu.V., prof.

"Prenatal infections in man" by Heinz Flamm. Reviewed by IU.V. Gul'kevich. Vop.okh.mat.i det. 7 no.9:92-94 S '62. (MIRA 15:12)

(FETUS—DISEASES) (INFECTION)
(FLAMM, HEINZ)

GUL'KEVICH, Yu.V.; GUL'KEVICH, K.Yu.

Cavernous hemangiomas of the liver in newborn infants and their thanatogenetic importance. Trudy Inst. eksp. morf. AN Gruz. SSR 11:111-114 '63. (MIRA 17:11)

1. Kafedra patologicheskoy anatomii Minskogo meditsinskogo instituta.

VASIL'YEVA, N.N., kand. med.nauk; GOLUBEVA, K.I., kand. med. nauk; GUL'KEVICH, Yu.V., prof.; DAL', M.K., doktor med.nauk, prof.; IL'INA, A.V., kand.med. nauk; LEVKOYEVA, E.F., doktor med.nauk, prof.; MASLOVA, I.P., kand. med.nauk; PRIGOZHINA, A.L., kand. med.nauk; UGRYUMOV, B.P., prof.; SHATILOVA, T.A, kand. med.nauk; SHCHEGLOVA, A.A., kand. med.nauk; DVIZHKOV, P.P., prof., red. toma; STRUKOV, A.I., prof., red. toma; OSTROVERKHOV, G.Ye., prof., glav. red.; APATENKO, A.K., kand. med. nauk, nauchn. red. toma

[Multivolume handbook on pathological anatomy] Mnogotomnoe rukovodstvo po patologicheskoi anatomii. Otv. red. A.I. Strukov. Moskva, Medgiz. Vol.1. [History of pathological anatomy; pathological anatomy of the endocrine glands, skin, ear, and eye] Istoriia patologicheskoi anatomii; patologicheskaia anatomiia zabolevanii endokrinnykh zhelez, kozhi, ukha i glaza. Red. toma: P.P.Dvizhkov i dr. 1963. 670 p. (MIRA 16:11)

1. Chlen-korrespondent AMN SSSR (for Strukov).
(ANATOMY, PATHOLOGICAL)

GUL'KEVICH, Yu.V.; RABTSEVICH, T.S. (Minsk)

Tumors in newborn infants and fetuses; a review of literature.
Arkh. pat. no.10:3-12 '64. (MIRA 18:10)

1. Kafedra patologicheskoy anatomii (zav.- prof. Yu.V. Gul'kevich) Minskogo meditsinskogo instituta.

KURYSHEV, V.I.; GUSEV, Ye.B.; SAVCOT'YANOVA, T.A.; GUL'AEV, A.V.

Observations of lunar occultations of stars in Ryazan in 1962. Biul. Inst.teor.astron. 9 no.8:578 '64. (MIRA 17:12)

1. Ryazanskiy pedagogicheskiy institut i Ryazanskoye otdeleniye Vsesoyuznogo astronomo-geodezicheskogo obshchestva.

LEVIN, Ya.A.; GUL'KINA, N.A.; KUKHTIN, V.A.

Condensed heterocycles. Part 3: Condensation of 3-amino-1,2,4-triazole with some β-ketocarboxylic esters. Zhur. ob. khim. 33 no.8:2673-2677 Ag '63. (MIRA 16:11)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.

LEYPUNSKIY, A.I.; ABRAMOV, A.I.; ANDREYEV, V.N.; BARYSHNIKOV, A.I.; BONDARENKO, I.I.; GALKOV, V.I.; GOLUBEV, V.I.; GUL'KO, A.D.; GUSEYNOV, A.G.; KAZACHKOVSKIY, O.D.; KOZLOVA, N.V.; KRASNOYAROV, N.V.; KUZ'MINOV, B.D.; MOROZOV, V.N.; NIKOLAYEV, M.N.; SMIRENKIN, G.N.; STAVISSKIY, Yu.Ya.; UKRAINTSEV, F.I.; USACHEV, L.N.; FETISOV, N.I.; SHERMAN, L.Ye.

Studies in the physics of fast-neutron reactors. Atom. energ. 5 no.3:277-293 S '58. (MIRA 11:10)
(Nuclear reactors)

SOV/89-5-3-1/25

AUTHORS: Leypunskiy, A. I., Abramov, A. I., Andreyev, V. N., Baryshnikov, A. I., Bondarenko, I. I., Galkov, V. I., Golubev, V. I., Gulko, A. D., Gusaynov, A. G., Kazachkovskiy, O. D., Kozlova, N. V., Krasnoyarov, N. V., Kuz'minov, B. D., Morozov, V. N., Nikolayev, M. N., Smirenkin, G. N., Stavisskiy, Yu. Ya., Ukraintsev, F. I., Usachev, L. N., Fetisov, N. I., Sherman, L. Ye.

TITLE: Investigations of the Physics of Reactors With Fast Neutrons. I (Issledovaniya po fizike reaktorov na bystrykh neytronakh)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 277-287 (USSR)

ABSTRACT: Since 1950 experiments have been carried out with fast reactors by the Main Administration of the Use of Nuclear energy. At the Physics Institute of this organization the fast-neutron reactor [redacted] -1 was put into operation early in 1955, and the reactors [redacted] -2 and [redacted] -3 followed in 1956 and 1957 respectively.

Reactor [redacted] -1:

Power	50 kW
Active zone	diameter and height ~ 13 cm
Fuel	plutonium diameter ~ 1 cm
Canning	thin steel tube

Card 1/[illegible]

The active zone may be surrounded by 2 mobile shields. Shield 1 consists of depleted uranium, and shield 2 of copper. An additional shield can be fastened on one side on to the shield with a diameter of 70 cm, so that total thickness can be increased to 60 - 100 cm. With this reactor investigations were carried out of: the spatial and energy distribution of the neutrons, of which the results are shown in a table for Pu^{239} (n,f), U^{235} (n,f), U^{235} (n,f), U^{238} (n,f), Np^{237} (n,f), Pu^{240} (n,f), U^{238} (n,γ), Au^{197} (n,γ), U^{238} (n,2n). Measurement of the conversion factor. The latter was determined experimentally as amounting to 2,4 to 2,5. It was also calculated by means of the multi-group computation method in S_4-th approximation (Ref 1). The electronic computer was used under the supervision of Professor Ye. S. Kuznetsov. For computation the experimental values for [illegible] of V. I. Kalashnikova (Ref 5), G. N. Smirenkin (Ref 6), B. D. Kuz'minov (Ref 7), and for α the values obtained by P. Ye. Spivak (Ref 8), V. N. Andreyev (Ref 9) were used. As a result of computations the coefficient was found to amount to 2,6.

Card [illegible]

The Distribution of Neutrons in Uranium

The cross sections of the various reactions for the equilibrium spectrum and for the asymptotic spectrum of the isolated uranium was determined both theoretically and experimentally. The asymptotic length of diffusion determined experimentally and theoretically amounts to 9,1 ± 0,1 cm. The average number of fissions of uranium 238 caused by fission neutrons amounts to 0,17 ± 0,01. This is in agreement with the data given by reference 10.

Furthermore, the influence exercised by the resonance structure of the cross sections upon the spatial distribution of the neutrons is investigated. Kh. D. Mishchenko showed that for neutrons with 24 keV the total cross section for copper is reduced by about three times its amount with a modification of target thickness of from 0,5 to 50 mm. There are 12 figures, 7 tables, and 15 references, 9 of which are Soviet.

(Continued on abstract 7/15)

Card 3/[illegible]

Gal'ko, A. D.

SOV/89-5-3-7/15

AUTHORS: Leypunskiy, A. I., Abramov, A. I., Andreyev, V. N., Baryshnikov, A. I., Bondarenko, I. I., Galkov, V. I., Golubev, V. I., Gal'ko, A. D., Guseynov, A. G., Kazachkovskiy, O. D., Kozlova, N. V., Krasnoyarov, N. V., Kuz'minov, B. D., Morozov, V. N., Nikolayev, M. N., Smirenkin, G. N., Stavisskiy, Yu. Ya., Ukraintsev, F. I., Usachev, L. N., Fetisov, N. I., Sherman, L. Ye.

TITLE: Investigations of the Physics of Reactors With Fast Neutrons. II (Issledovaniya po fizike reaktorov na bystrykh neytronakh) (Continued from abstract 6/15)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 284-293 (USSR)

ABSTRACT: The reactivity and the kinetics of the reactor were measured. It could be shown that in the center of the active zone the weight of the 5 MeV neutrons is higher by ~15% than that of 250 MeV neutrons. The effective yield of the delayed neutrons in the reactor with a uranium shield exceeds that of a reactor with a copper shield by 1,4 times its amount.

Reactor [redacted] 5:

The active plutonium zone is the same as in reactor БР-1. In the center of the reactor a water-uranium channel is provided, which is separated from the plutonium zone by a uranium layer

Card 1/3

of 8 cm thickness. The uranium-water lattice consists of cylindrical slugs of normal uranium, which have a diameter of 35 mm. The canning material is aluminum. The ratio between water and uranium is 0,35. The lattice spacing is 40 mm. Measurements carried out with the water-uranium lattice instead of with the pure uranium layer showed:

1) The conversion factor is reduced from 2,45 ± 0,10 to 1,7 ± 0,2.

2) In the case of a fixed power output of the active zone the velocity with which the total quantity of plutonium 239 and uranium 235 is formed was increased by 35%.

3) The velocity with which plutonium is produced increased by 1,8 times its amount.

4) In the case of a fixed power output of the active zone the total power output of the reactor is increased by 2,2 times its amount.

Reactor [redacted] -2:

This reactor was described more in detail in references 12 and 13. Its nominal power output is 120 kW, the maximum output is 200 kW. In the active zone of the reactor БР-2, which consists of plutonium rods, mercury is used as a coolant, which takes up

Card 2/3

~17% of the total volume of the active zone. The regulating rods (interior of shield) are made from a copper-nickel alloy. The external shield consists of uranium slugs canned with stainless steel. Thickness ~25 cm. The uranium shield is surrounded by copper of 15 cm thickness.

The presence of mercury in the active zone leads to a decrease of the content of fast neutrons in the spectrum. The conversion factor was 1,6 ± 0,2.

Theoretically the kinetic equation for this reactor was calculated by G. I. Marchuk according to the method developed by V. S. Vladimirov. Theoretical calculation of the critical mass was carried out with an error of 4%, and that of the effectiveness of the regulating rods with an error of 6%. The effective yield of the delayed neutrons was found to amount to 0,27%, while the experimental value was 0,24 ± 0,04%. There are 7 figures, 1 table, and 13 references, 9 of which are Soviet.

Card 3/3

Gul'Ko, A.D.

21(4) **PHASE I BOOK EXPLOITATION** SOV/2583

International Conference on the Peaceful Uses of Atomic Engergy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reakt[illegible] i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

PART II. EXPERIMENTAL AND RESEARCH REACTORS

PART III. PHYSICS AND ENGINEERING OF REACTOR DESIGN

199

S/120/60/000/004/006/028
E032/E414

21.2100

AUTHORS: Abov, Yu.G., Beketov, V.A., Gul'ko, A.D., Yermakov, O.N., Krupchitskiy, P.A., Taran, Yu.V. and Shatlovskaya, N.S.

TITLE: Production of Polarized Neutrons by Reflection From a Cobalt Mirror

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.4, pp.51-55

TEXT: The method of obtaining polarized thermal neutrons by reflection from magnetic mirrors was described by Hughes and Burgy (Ref.1) and Akhiyezer and Pomeranchuk (Ref.2). In order to obtain neutrons with practically a single spin state it is necessary that the component of the induction B which is parallel to the surface of the mirror should be greater than a certain minimum value. When this condition is satisfied practically all the reflected neutrons will have spins parallel to B. In the case of pure cobalt it can be shown, using the data of Shull and Wollan (Ref.3), that $B \geq 11200$ gauss. Strictly speaking, this is the condition for the quantity $B - H$ where H is the magnetic field in the gap of the magnet. According to Bozort (Ref.4) the saturation value of $B - H$ is 17900 gauss. As a result, the condition for complete polarization of neutrons reflected from a

Production of Polarized Neutrons by Reflection From a Cobalt Mirror

magnetized mirror of pure cobalt can be written down in the form

$$(B - H) \geqslant 63\% \ (B - H)_s \qquad (1)$$

The present authors have used these ideas to produce polarized neutrons. The apparatus employed is shown schematically in Fig.2. A narrow vertical neutron beam was formed by a collimator which was 1.2 m long and had a rectangular slot of 110 x 3 mm. The neutron flux at the exit of the collimator was 4×10^7 neutrons/cm^2 sec. The cobalt mirror-polarizer was fixed between the magnet poles. The magnet-mirror system could be adjusted to the required position and in order to obtain a definite separation between the direct and the reflected beams a special brass screen, which could be adjusted with the aid of a micrometer screw, was provided. The cobalt mirrors employed were 100 mm x 500 mm x 40 μ. The cobalt was deposited electrolytically on a 5 mm thick copper plate. The analysing mirror was held in another magnet and was also adjustable.

S/120/60/000/004/006/020
E032/E414

Production of Polarized Neutrons by Reflection From a Cobalt Mirror

In order to separate the beams reflected from the first and second mirrors, special cadmium and copper screens placed in front of the second mirror were employed. The neutrons were recorded by a high-efficiency multi-wire proportional counter filled with B^{10}-enriched BF_3. A cadmium slit, 1.5 mm wide and 60 mm long, was placed in front of the counter. It was found that the degree of polarization obtained with an angle of incidence of 8 minutes was. 75 $\pm$ 2%. 100% Polarizations were obtained at greater angles of incidence. Mirrors made of an alloy of cobalt and 7% iron were also investigated but the maximum polarizations obtained did not exceed 60%. In the case of the pure cobalt mirrors, the flux of polarized neutrons at θ = 8 min was 3 x 10^5 neutrons/cm^2 sec at the centre of the beam, the half-width of the beam being 8 mm and the height 100mm (magnetic field in polarizer magnet = 600 Oe). The total intensity was 2 x 10^6 neutrons/sec. Acknowledgments are expressed to Yu.Ya.Garrison, A.K.Dubasov, N.M.Regentov and A.I.Savushkin for their assistance and to T.B.Nova for valuable advice. There are 4 figures, 1 table and 9 references: 3 Soviet

Card 3/4

S/120/60/000/004/006/028
E032/E414

Production of Polarized Neutrons by Reflection From a Cobalt Mirror

and 6 non-Soviet (3 of which are translated into Russian).

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki AN SSSR (Institute of Theoretical and Experimental Physics AS USSR) all authors except Yu.V.Taran; Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Studies) Yu.V.Taran

SUBMITTED: April 9, 1960

Fig. 2

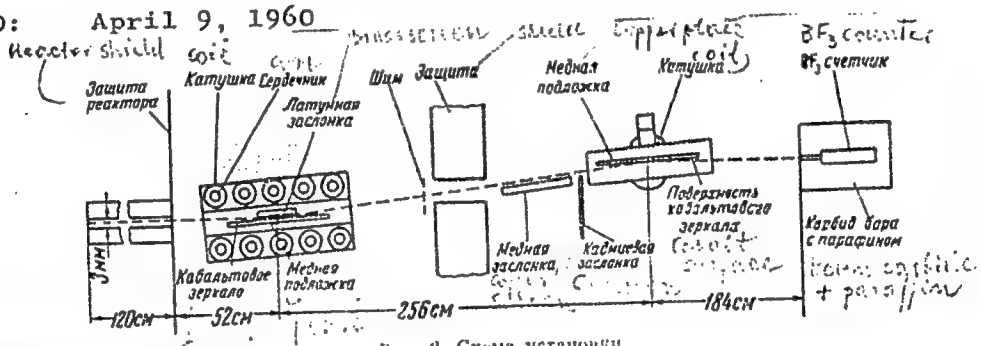


Рис. 2. Схема установки

Card 4/4

PHASE I BOOK EXPLOITATION SOV/5425

Fedorov, N.D., Candidate of Technical Sciences, Compiler

Kratkiy spravochnik inzhenera-fizika: Yadernaya fizika. Atomnaya fizika (Concise Handbook for the Engineering Physicist: Nuclear Physics. Atomic Physics) Moscow, Atomizdat, 1961. 507 p. 28,000 copies printed.

Ed.: A.F. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This reference book is intended for engineers and physicists working in the field of atomic and nuclear physics.

COVERAGE: The first seven parts of the book contain the most necessary reference material on atomic and nuclear physics. The remaining parts present information and data from other related fields. The last part gives the information on systems of units compiled from the new GOST specifications, physical constants, and some mathematical data. No personalities are mentioned. References accompany each part of the book.

Card 1/13

Concise Handbook (Cont.) SOV/5425

TABLE OF CONTENTS:

Card 2/13

Concise Handbook (Cont.) SOV/5425

Card 3/13

27694
S/120/61/000/003/003/041
E032/E314

24.6500

AUTHOR: Gul'ko, A.D.

TITLE: On the Measurement of the Polarization of Neutrons

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No. 3, pp. 40 - 44

TEXT: A general review is given of two methods for measuring the polarization of a neutron beam. These methods are: 1) depolarizing plate and 2) double scattering. The polarization of a neutron beam which is produced by some polarizer can be determined with the aid of a further polarizing device, usually designated as the analyser. Let $S(\lambda)$ be the neutron intensity in each spin state for a given wavelength λ (per unit wavelength) incident on the polarizer. The neutron intensities reaching the analyser can then be written down in the form $a_+(\lambda)S(\lambda)$ and $a_-(\lambda)S(\lambda)$. The signs "plus" and "minus" refer to neutrons whose spins are parallel and anti-parallel to the magnetic field, respectively. The coefficients a_+ and a_- depend on the reflection coefficients of the

Card 1/8

On the Measurement of ....

polarizer R_{+1} and R_{-1} . They also depend on the depolarization in the space between the polarizer and the analyser and the presence in the analysed beam of unpolarized primary neutrons. The degree of polarization is defined by

$$P = (I_+ - I_-)/(I_+ + I_-) \qquad (1)$$

where I_+ and I_- are the intensities corresponding to the two spin states. For the beam incident on the analyser

$$P_1 = \frac{\int_{\lambda_1} (a_+ - a_-)S d\lambda}{\int_{\lambda_1} (a_+ + a_-)S d\lambda} \qquad (2)$$

Card 2/8

On the Measurement of ....

where the integration limits are determined by the spectrum of S and the coefficients a_+ and a_-. The lower limit λ_1 is equal to the smaller of the two limiting wavelengths, corresponding to the two spin states. The upper limit is similarly defined. In the "depolarizing-plate method" the plate is usually of magnetised iron (or other ferromagnetic) and depolarizes the polarized beam incident upon it owing to refraction at the randomly distributed domain boundaries. The method consists of the measurement of the neutron intensities with and without the depolarizing plate between the polarizer and the analyser. If the ratio of these two intensities is denoted by R, and the degree of polarization produced by the analyser when a depolarized beam is incident upon it denoted by P_2, then it can be shown that

$$P_2 = \frac{\int_{\lambda_{1,2}} (a_+ + a_-)(R_{+2} - R_{-2}) S d\lambda}{\int_{\lambda_{1,2}} (a_+ + a_-)(R_{+2} + R_{-2}) S d\lambda}. \qquad (4)$$

Card 3/8

On the Measurement of ....

$$P_1P_2 = \frac{\int_{\lambda_1} (a_+ - a_-)\, Sd\lambda \cdot \int_{\lambda_{1,2}} (a_+ + a_-)(R_{+1} - R_{-1})Sd\lambda}{\int_{\lambda_1} (a_+ + a_-)\, Sd\lambda \cdot \int_{\lambda_{1,2}} (a_+ + a_-)(R_{+1} + R_{-1})Sd\lambda},$$

$$R - 1 = \frac{\int_{\lambda_{1,2}} (a_+ - a_-)(R_{+1} - R_{-1})\, Sd\lambda}{\int_{\lambda_{1,2}} (a_+ + a_-)(R_{+1} + R_{-1})\, Sd\lambda}. \qquad (5)$$

where R_{+2} and R_{-2} are the reflection coefficients of the analyser. The double-scattering method consists of the measurement of the intensity of neutrons reflected from the analyser when there is a region of space between the polarizer and the analyser where the spin directions are reversed, and when this region is absent. If the ratio of these intensities is denoted by R', then

Card 4/8

On the Measurement of ....

$$P_1P_2 = \frac{\int_{\lambda_1}(A_+ - A_-)\,Sd\lambda \cdot \int_{\lambda_{1,2}}(A_+ + A_-)(R_{+s} - R_{-s})\,Sd\lambda}{\int_{\lambda_1}(A_+ + A_-)\,Sd\lambda \cdot \int_{\lambda_{1,2}}(A_+ + A_-)(R_{+s} + R_{-s})\,Sd\lambda}, \quad (7)$$

(7)

$$\frac{R'-1}{R'+1} = \frac{\int_{\lambda_{1,2}}(A_+ - A_-)(R_{+s} - R_{-s})\,Sd\lambda}{\int_{\lambda_{1,2}}(A_+ + A_-)(R_{+s} + R_{-s})\,Sd\lambda}.$$

where in terms of the previous notation $a_+ = A_+$ and $a_- = A_-$ for parallel fields and $a_+ = A_-$, $a_- = A_+$ for antiparallel fields. In the "depolarizing-plate method" the plate not only depolarizes the neutrons but also scatters and absorbs them. Nuclear scattering can be allowed for with the aid of the method put forward by L.D. Roberts, S. Bernstein, I.W.T. Dabbs, C.P. Stanford (Phys. Rev. 1954, 95, 105 - Ref. 9)

Card 5/8

On the Measurement of ....

but not the small-angle scattering. The present author describes the following procedure which he has used to correct for the small-angle scattering. In practice, one measures the ratio $R_1 = I_1^{\delta\omega} / I_1^{\omega}$, i.e. the ratio of intensities reflected from the analyser with and without the depolarizing plate. This differs from the ideal value $R = I^{\delta\omega} / I^{\omega}$ which obtains in the absence of small-angle scattering ($I_1^{\delta\omega}$ is, of course, identical with $I^{\delta\omega}$). The difference between the ideal and non-ideal ratios can be determined by plotting the quantities R_1, R_2 and R as functions of the thickness of the depolarizing plate. Fig. 1 shows this plot for $\theta_1 = 6.4'$ and $\theta_2 = 4.5'$. The thick (upper) curves were obtained for cobalt plates and the thin (lower) curves were obtained for iron plates. A similar plot for $\theta_1 = \theta_2 = 29'$ is shown in

Card 6/8

On the Measurement of ....

Fig. 2. The thickness of the cobalt plate for which R reaches its ideal value is found to be 0.5 - 0.8 mm.
There are 2 figures and 9 references: 4 Soviet and 5 non-Soviet.
The four latest English-language references are:
Ref. 3 - C.P. Stanford, T.E. Stephenson, L.W. Cochran and S. Bernstein, Phys. Rev., 1954, 94, 374; Ref. 5 - R. Haas, L.B. Leipunor and R.K. Adair, Phys. Rev., 1959, 116, 1221; Ref. 2 - D.J. Hughes and M. Burgy, Phys. Rev., 1951, 81, 498 and Ref. 9 (quoted in text).

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki AN SSSR (Institute of Theoretical and Experimental Physics of the AS USSR)

SUBMITTED: June 15, 1960

Card 7/8

GUL'KO, A.D.; TARAN, Yu.V.

Production and use of polarized resonance neutrons. Atom.energ. 10 no.5:506-508 My '61. (MIRA 14:5)
(Neutrons)

ACC NR: AP6030156 (A) SOURCE CODE: UR/0120/66/000/004/0195/0196

AUTHOR: Abov, Yu. G.; Bulgakov, M. I.; Gul'ko, A. D.; Yermakov, O. N.; Krupchitskiy P. A.; Oratovskiy, Yu. A.; Trostin, S. S.

ORG: Institute of Theoretical and Experimental Physics, GKAE, Moscow (Institut teoreticheskoy i eksperimental'noy fiziki GKAE)

TITLE: Production of polarized beams of thermal neutrons by means of a pile of cobalt mirrors

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1966, 195-196

TOPIC TAGS: neutron beam, thermal neutron, nuclear research reactor, cobalt, neutron polarization, collimator

ABSTRACT: A unit for the production of polarized neutron beams needed for experimental purposes is described. The unit, shown below, consists of a collimator and a pile of cobalt mirrors. The collimator, consisting of 10 convergent slits separated by vertical steel plates, is placed in the horizontal channel of a reactor. Each of the cobalt mirrors is backed by glass and the length of each mirror is made up of three separate units 350 x 125 x 3 mm^3 in size. The top and bottom ends of the mirrors are fitted into 10 slots bored through the connecting strips and clamped with wedge clamps so that each mirror has a corresponding slit in the collimator.

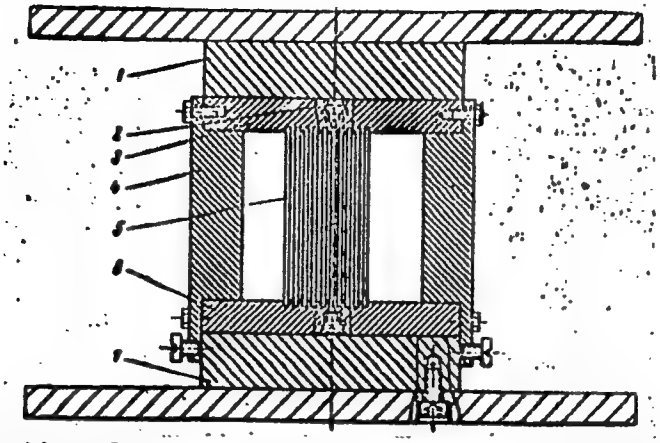
 UDC: 539.1.078.539.125.5

ACC NR: AP6030156

The pile of mirrors is set into an electromagnet. The mean angle of beam incidence on a corresponding mirror is 7.5' and all neutron beams reflected by the mirrors converge at a distance of 4.5 m from the pile of mirrors. The incident and reflected beams are separated by means of a sliding screen system made of boron carbide situated near the target. The flow of polarized neutrons on a specimen with an area of 100 x 10 mm^2 amounted to 3 x 10^7 neutrons/sec. The degree of neutron beam polarization amounted to — 90%, and the polarization efficiency of 95%. The authors thank V. A. Beketov and N. S, Shatlovskaya for making the cobalt mirrors, Yu. Ya. Garrison for assembling the pile of mirrors, and A. I. Savushkin, V. K. Rissukhin, O. M. Svetlov, and I. L. Karpikhin for helping with the measurements. Orig. art. has: 1 figure.

Card 2/3

ACC NR: AP6030156



1. upper magnetic pole, 2. wedge clamp, 3. upper connecting strip, 4. side wall (brass), 5. cobalt mirror, 6. lower connecting strip, 7. lower magnetic pole

SUB CODE: 20, 18/ SUBM DATE: 31Jul65/ ORIG REF: 001/ OTH REF: 002

Card 3/3

GUL'KO, A.G.

Characterization of vanadium as an industrial poison. A. G. Gul'ko (N. I. Pirogov Med. Inst., Odessa). Gigiena i Sanit. 21, No. 11, 24-8(1956).—V compds. in fine dust form show strongly irritating action on mucous membranes of the respiratory organs and a general toxic action (pulmonary inflammed respiratory system, and disturbed nervous system). It is suggested that tolerance for V in the air should be under 0.5 mg./cu.m. of air. G. M. Kosolapoff

GUL'KO, A.G.; SHROYT, I.G.

Action of pentachlorpropane following its peroral administration; toxicological and pathomorphological data. Farm. i toks. 27 no.3: 356-358 My-Je '64. (MIRA 18:4)

1. Moldavskiy institut epidemiologii, mikrobiologii i gigiyeny, Kishinev.

L 22458-66 EWT(d)/EWP(h)/EWP(l)
ACC NR: AP6002542 (A,N) SOURCE CODE: UR/0286/65/000/023/0043/0043

AUTHORS: Kolot, I. I.; Gladkiy, V. I.; Sorokin, Ye. K.; Zhardinovskiy, G. M.; Sluchevskiy, V. A.; Gul'ko, A. I.; Kurochkin, A. S.

ORG: none

TITLE: Crane with variable extension boom. Class 35, No. 176667

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 43

TOPIC TAGS: crane, loading machinery, transport equipment

ABSTRACT: This Author Certificate presents a crane with variable extension boom which has a pinned supporting strut. The end of the strut is connected through a compound pulley system to the crane boom. To increase the lifting capacity with extended boom by eliminating compressive loads and to decrease crane height during transport, the pinned supporting strut is mounted at the base of the boom and is equipped with a diverting pulley mounted on the bottom part of this pulley so that the pulley forces are directed upward, opposing the forces resulting in the strut due to tension in the boom pulley system (see Fig. 1).

Card 1/2 UDC: 621.873.3

L 22458-66

ACC NR: AP6002542

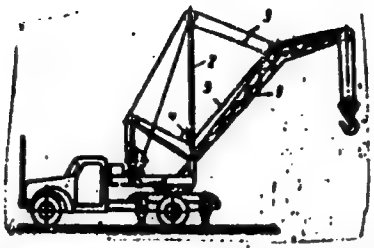


Fig. 1. 1 - boom; 2 - strut; 3 - boom pulley system; 4 - diverting pulley; 5 - load cable.

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 28Oct64

Card 2/2

GUL'KO, A.M., inzh.

Using the blasting power of distributed charges in tunneling operation. Transp. stroi. 14 no.1 47-48 Ap '64. (MIRA 17:9)

GUL'KO, A. Ye.; CHULIN, V.M.

Sparkproof electronic relay. Transp. i khran. nefti i nefteprod. no.4:17-19 '64 (MIRA 17:7)

1. Spetsial'noye konstruktorskoye byuro "Transneft'avtomatika".

GUL'KO, B. N.

USSR/Physics
Electrons

Jul/Aug 48

"Influence of External Factors on the Probability of Electron Transitions," N. A. Prilezhayeva, B. N. Gul'ko, V. I. Danilova, Siberian Physicotech Inst, Tomsk State U imeni V. V. Kuybyshev, 3 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XII, No 4

Introduces examples of influence of a constant external electric field, influence of a nonhomogeneous intermolecular field, and influence of collisions with neutral particles upon the probability of electron transitions. Examples show that probability of

[redacted]

53/49T87

USSR/Physics (Contd)

Jul/Aug 48

electron transition is not an absolutely invariant atomic or molecular constant.

[redacted]

53/49T87

GUL'KO, B. N.

"Determination of Some Electric Characteristics of Ultra High Frequency Discharge Using the Spectral Method."

paper presented at Second All-Union Conference on Gaseous Electronics, Moscow, 2-6 Oct '58.

24.2120

S/139/60/000/01/033/041
E192/E382

AUTHOR: Gul'ko, B.N.

TITLE: Investigation of Low-pressure Pulsed Discharge by the Probe Method

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, Nr 1, pp 197 - 202 (USSR)

ABSTRACT: The dependence of the electron temperature and concentration of the gas pressure and current was investigated in pulsed discharges in argon. The system employed in the measurements is illustrated in Figure 1 and the experimental tube is shown in Figure 2. The discharges were produced by applying pulses having an amplitude up to 10 kV and duration of 13 μs to the anode of the tube; the repetition frequency of the pulses was 50 c/s. The current flowing in the probe was measured across the resistance R_3 which was equal to 0.5 kΩ (Figure 1). The potential of the probe could be varied by means of a potentiometer. The current through the tube was determined by measuring the voltage across a resistance R_p = 100 Ω (Figure 1). The discharge tube had a heated cathode which was in the form

Investigation of Low-pressure Pulsed Discharge by the Probe Method

of a tungsten-wire helix having a length of 8 mm and a diameter of 1 mm; the thickness of the wire was 0.2 mm. The probe was made of molybdenum wire having a diameter of 0.2 mm. The anode of the tube was in the form of a nickel disc having a diameter of 15 mm. The tube was filled with pure argon. The results of the experiments are illustrated in Figures 3 and 4. Figure 3 shows a probe characteristic, while Figure 4 illustrates a voltage in current curve of the discharge. By assuming that the electron velocity distribution in the pulsed discharge is of the Maxwell type, it is possible to determine the electron temperature and concentration from the probe characteristic. Since the discharge was investigated at currents ranging from 160 to 855 mA and at pressures from 0.3 to 1.56 mm Hg, it was possible to determine the dependence of the electron temperature T_e and concentration n_e as a function of the discharge current I_p at pressure p; the resulting characteristics are

Card2/3

4

S/139/60/000/01/033/041
E192/E382

Investigation of Low-pressure Pulsed Discharge by the Probe Method

shown in Figures 5 and 6. The dependence of the maintaining voltage of the discharge tube on the gas pressure is illustrated in Figure 7. From Figure 5 it is seen that there is no direct proportionality between Te and the discharge current. The increase of the electron temperature is comparatively rapid and this can be explained by the presence of the inelastic collisions of the second kind during which the energy of the excited atoms is imparted to the electron. Figure 7 shows that the maintaining voltage rapidly decreases with the increase in pressure. The same type of behaviour can be observed in the electron temperature curve (Figure 6).
There are 7 figures and 3 Soviet references.

ASSOCIATION: Novosibirskiy elektrotekhnicheskiy institut
(Novosibirsk Electrotechnical Institute)

SUBMITTED: February 27, 1959

Card 3/3

Gul'ko, B.N.

21.2100

82136
S/058/60/000/02/09/023

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 2, p. 27, # 2746

AUTHOR: Gul'ko, B. N.

TITLE: An Investigation of the Electronic Gun of a Betatron With the Aid of an Electrolytic Bath

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1958, Vol. 86, pp. 197-203

TEXT: A detailed investigation of the operation of the electronic gun of a betatron was carried out. With the aid of an electrolytic bath, the effect was studied of the depth (x) of the tungsten cathode immersion into the control electrode on the focusing of electrons. The investigations were carried out with the model of a three-electrode gun; the dimensions of the electrodes were increased by 100 times compared to the original electrode. In the investigation of the potential distribution in the gap between the control electrode and the anode at x = 0.25; 1.00 and 1.75 mm, it was detected that with an increasing x the width of the electronic beam decreases due to the more intensive deflection of the electrons to the axis of the system. The dependence was studied of the angles of deflection of electron trajectories in relation to the axis of the

Card 1/2

82136

S/058/60/000/02/09/023

An Investigation of the Electronic Gun of a Betatron With the Aid of an Electrolytic Bath

system on the angle of electron emission from the cathode. It was shown that the value of x in the case of an opening of the electronic beam of 12° lies within the range of 1.2-1.3 mm, instead of the universally adopted value of 0.25 mm.

ASSOCIATION: Tomskiy politekhn. in-t (Tomsk Polytechnic Institute)

V. A. Khramchenkov

Card 2/2

GUL'KO, B.N.

Preparation of a soldered betatron vacuum chamber for 15 MeV.
Izv.TPI 86:204-211 '58. (MIRA 13:5)
(Betatron)

Gul'ko, F.B.

112-4-7645

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 4, p. 15 (USSR)

AUTHORS: Gul'ko, F.B., Usherenko, A.I.

TITLE: More on the Problem of Determining the Specific Inductive Capacitance of Solid Dielectrics (K voprosu opredeleniya dielektricheskoy pronitsayemosti tverdykh dielektrikov)

PERIODICAL: Sb. statey nauch.-stud. o-va Mosk. energ. in-ta, 1956, Nr 9, pp. 152-162

ABSTRACT: The analysis of formulae for calculating the specific inductive capacitance ε from the capacity of the sample between two disc electrodes is given. These formulae, based on the calculation of the edge capacitance are given in various studies and tables of standards. It has been demonstrated that certain of these formulae are inaccurate and admit an error of from five to six per cent.

Card 1/2

More on the Problem of Determining the Specific Inductive (Cont.) 112-4-7645

The optimum ratios between the thickness and diameter of the sample and the diameter of the electrodes have been calculated. Formulae for calculating the edge capacitance of the different variants of disc electrodes (electrodes with partially or completely covered disc surfaces) have been derived. In agreement with experimental data, these formulae give an error when calculating ε of not more than one per cent. M.D.M.

Card 2/2

S/123/60/000/009/006/017
A004/A001

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1960, No. 9, p. 70, # 43578

AUTHOR: Gul'ko, B.N.

TITLE: On the Manufacture of a Sealed-Off Vacuum Chamber for a 15-Mev Betatron

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1958, Vol. 86, pp. 204-211

TEXT: The author cites the advantages of 15-Mev betatrons with sealed-off electric vacuum chambers in comparison with permanently evacuated accelerated chambers: sealed-off chambers make it possible to prepare the betatron for operation within some minutes and use electronic guns with oxide cathodes. Then the technology of manufacturing the chamber is investigated: preparatory operations, the sealing and stamping process, evacuation and draining. The author describes the methods of welding-up the electronic gun into the chamber, adjustment of the getter (gas-absorbing) rack and producing the vacuum with the aid of the evacuation post. For the absorbing of residual gases a final operation

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Card 1/2

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On the Manufacture of a Sealed-Off Vacuum Chamber for a 15-Mev Betatron

is effected in the chamber, i.e. draining. With the aid of manometric tubes, switched on for 3-5 minutes prior to operation, it is possible to set the pressure in the chamber equal to $1\text{-}2 \cdot 10^{-7}$ mm Hg. There are 3 figures and 3 references.

B.I.M.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

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B012/B063

AUTHORS: Gadzhiyev, M. Yu., Gul'ko, F. B., Dzhelyalov, A. R., Dudnikov, Ye. Ye., Kazakov, V. D., Litovchenko, I. A., Norkin, K. B., Prokhorov, N. L.

TITLE: Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol. 21, No. 9, pp. 1326-1331

TEXT: The sed'maya nauchno-tekhnicheskaya konferentsiya molodykh uchenykh IAT AN SSSR po voprosam avtomaticheskogo upravleniya (Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the IAT AS USSR), held from March 14 to 16, 1960, dealt with problems of automatic control. It was attended by more than 400 persons, among them about 200 representatives of various organizations in Moscow and the Moscow oblast', who discussed research work carried out by young scientists in 1959. 75 lectures were delivered. The

Card 1/9

Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

S/103/60/021/009/013/013
B012/B063

Conference was opened by Academician V. A. Trapeznikov, Director of the Institute of Automation and Telemechanics. Professor M. A. Ayzerman, Doctor of Technical Sciences, spoke about "Scientific Problems of the Theory of Finite Automatic Machines (konechnyy avtomat)". At the final plenary meeting, Ye. V. Voloshina and Ye. V. Shtil'man gave a report on the "Simulation of Teaching Processes". The following sections worked between the two plenary meetings: 1) for automatic control with sub-sections for the theory of automatic control and automatic control systems; 2) for automatic checking; 3) for computers; 4) for elements and installations in automation and telemechanics; 5) for statistical methods in automation; 6) for the theory of relay circuits and finite automatic machines (konechnyy avtomat); 7) for automatic electric drive. The following lectures were delivered at the first sub-section of the first section: V. N. Novosel'tsev reported on the determination of the formula for optimal control of relay-[illegible] systems of second order for the case of pure relay control and fo[illegible]e case of relay control in the presence of an insensitive range. I. S. Morosanov spoke about the effect of fluctuations on extremal relay systems in the self-oscillating state.

Card 2/9

Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

S/103/60/021/009/013/013
B012/B063

The author showed that the methods of calculating statistical transfer coefficients in the form suggested by I. Ye. Kazakov cannot be employed in this case. V. G. Gradetskiy and Yu. I. Ostrovskiy gave a report on "The Operation of Extremal Control Systems in Which the Extreme Value of Noise Is Memorized". N. V. Grishko gave the results of the determination of optimal characteristics of an extremal system under random actions. T. G. Babunashvili spoke about the investigation of the state of a control system having a servo-motor with a non-linear characteristic of speed and a strong feedback. He mentioned Kh. Masser. A. I. Morozov reported on a "Qualitative Study of Differential Equations Obtained When Solving a Problem of Synthesis" and explained A. M. Letov's method of synthesizing control systems. M. M. Simkin spoke about the determination of periodic modes of operation of pulse systems. R. P. Parsheva investigated the problem of stability according to Lagrange in the case of transient modes of operation of five-dimensional automatic, non-linear control system. V. A. Kislyakov spoke about "Longitudinal Stability of an Air-plane With a Delayed Autopilot". He mentioned a method of asymptotic approximations devised by N. M. Krylov and N. N. Bogolyubov. B. Ye. Chuprun reported

Card 3/9

Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

S/103/60/021/009/013/013
B012/B063

on "The Formulation of the Law of Controlling Linear, Stable Objects, Guaranteeing Least Displacement of the Controller". The following lectures were delivered at the second sub-section of the first section: B. B. Buyanov reported on the application of the theory of optimal quick-acting systems for controlling the drive of flying scissors of a rolling mill. B. G. Volik spoke about an automatic optimizer with two channels and two limitations, which is used to determine the extreme value immediately on an object of large inertia. I. N. Bocharov reported on an instrument recording distribution curves of any size. Ye. A. Rateyeva spoke about a three-channel optimizer for chemical production. V. G. Sholokhov gave an experimental proof of the convergence of the tuning of noise generators. K. B. Norkin's lecture dealt with the automatic tuning of the output cascade of a transmitter with the aid of a system of automatic scanning. V. N. Shadrin described a program-control system with frequency division of its channels. V. V. Karibskiy and A. P. Yevseyeva's reports contained data on a universal interpolator for digital program-control systems and data on the automatic selection of the interpolation sections on machine tools with a linear interpolator. M. I. Tryts described the test sample

Card 4/9

of an apparatus for automatic programing. B. N. Andreyshikov spoke about the dynamic accuracy of machine tools with program control. M. M. Khasanov's report dealt with the dynamic characteristics of air conditioners. The following lectures were held at the second section: M. V. Rybashov and I. M. Ponasenko explained several circuits for the dynamic correction of transmitters. V. S. Likhoninskiy spoke about "A Capacitive Measuring Apparatus in Systems of Digital Program Control of Manufacturing Processes". M. A. Prusov gave a report on the principles of designing and constructing an instrument for measuring the temperature of rotating parts. Yu. V. Gushchin spoke about the possibility of using crystal layers of semiconductors on cadmium-sulfide backings for the indication of radioactive radiation. A. A. Kalmakov spoke about the possibility of using radioisotopes and the methods of nuclear spectroscopy for automatic checking of the metal content of alloys and concentration products of ores of non-ferrous metals. V. A. Viktorov reported on the effect of higher harmonics in coaxial vibrators upon the operation of an extremal endovibrator level-meter. The following lectures were held at the third section: A. G. Butkovskiy - "Simulation of Some Objects With Distributed Parameters"; A. V. Shileyko -

Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

S/103/60/021/009/013/013
B012/B063

"The Method of Synthesizing the Optimal Construction of a Digital Simulator"; R. N. Chernyshev - "Computing Amplifier With a Power Stage at the Output"; B. A. Pereverzev - "Combined Electromechanical Block of an Electric Simulator"; F. B. Gul'ko - "Quick-acting Electron Multipliers". Zh. A. Novosel'tseva spoke about "A Block for Controlled Delay"; K. B. Norkin - "A Method of Automatic Determination of the Extreme Value of a Multi-variable Function". V. A. Yakovlev - "Discrete Electric Differentiator". V. A. Brik - "Digital Computer for Compiling Programs for Machining Workpieces on a Milling Machine". The following lectures were held at the fourth section: Ye. A. Andreyeva spoke about a method of calculating the consumption and power characteristics of the "nozzle-flap" element in the case of a viscous, compressible and incompressible liquid. L. A. Tenenbaum derived formulas for the consumption and power characteristics of the "nozzle-flap" element in the case of a non-stabilized laminar flow of a viscous, incompressible liquid. T. K. Yefremova reported on pneumatic relay elements. V. S. Matorina spoke about "Magnetic Amplifiers at the Output of Alternating-current Magnets". M. A. Boyarchenkov - "Direct-current Reversible Magnetic Amplifier With Increased Efficiency" and "Action of a Magnetic Amplifier on a Counterelectromotive Force" (second

Card 6/9